

Contribution to the knowledge of the genus *Crocallis* TREITSCHKE, 1825 : Iberian species (Lepidoptera : Geometridae)

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Summary

The Spanish species of the genus *Crocallis* TREITSCHKE, 1825 are reviewed. Some taxonomical aspects of importance are discussed as well as variability and distribution. Drawings of male and female genitalia and photographs of the adults are included. The five species discussed are : *Crocallis tusciaria* (BORKHAUSEN, 1793), *C. albarracina* WEHRLI, 1940, *C. elinguarina* (LINNAEUS, 1758), *C. dardoinaria* DONZEL, 1840 and *C. auberti* OBERTHÜR, 1883.

Résumé

Dans ce travail, on étudie les espèces ibériques du genre *Crocallis* TREITSCHKE, 1825, ainsi qu'on expose quelques considérations taxonomiques. On y représente les genitalia, mâles et femelles, des cinq espèces : *Crocallis tusciaria* (BORKHAUSEN, 1793), *C. albarracina* WEHRLI, 1940, *C. elinguarina* (LINNAEUS, 1758), *C. dardoinaria* DONZEL, 1840 et *C. auberti* OBERTHÜR, 1883. On présente aussi une révision détaillée de la bibliographie et la distribution de ces espèces sur la Péninsule Ibérique.

Introduction

The genus *Crocallis* TREITSCHKE, 1825, of the subfamily Ennominae, includes only a small number of species, which are generally difficult to identify. The most widely distributed and the type species of the genus, *Crocallis elinguarina* (LINNAEUS, 1758), is Eurasiatic, whereas the remainder are confined to the western Palaearctic area. The Iberian representatives of the genus are : *Crocallis tusciaria* (BORKHAUSEN, 1793), *C. albarracina* WEHRLI, 1940, *C. elinguarina* (LINNAEUS, 1758), *C. dardoinaria* DONZEL, 1840 and *C. auberti* OBERTHÜR, 1883. The distribution of *C. dardoinaria* and *C. auberti* is Atlanto-Mediterranean,

C. elinguaris is a Eurasiatic element and *C. tusciaria* is Mediterranean-Asiatic. Finally, *C. albarracina* is an Iberian endemic species.

Outside the Iberian Peninsula, one species is found in North Africa, *C. boisduvalaria* H. LUCAS, 1848, occurring in Morocco, Algeria and Tunisia, and two species are endemic elements of the Canary Isles: *C. matillae* PINKER, 1974 and *C. bacalladoi* PINKER, 1978. The other species belonging to this genus live in the Eastern Mediterranean area and Iran.

Methods

The results obtained are based on the study of a great quantity of material deposited in public and private collections as well as material collected by the authors and deposited in the collections of the universities of Barcelona and Valencia. It has been impossible to include complete lists of material examined with dates, exact localities and collectors as the contents of such lists would have increased the length of the paper unnecessarily. For the same reason, it has only been possible to summarise the most important data from the literature. Special emphasis has been given to the study of the genitalia and line drawings have been preferred to photographs.

Crocallis TREITSCHKE, 1825

Crocallis TREITSCHKE, 1825, in OCHSENHEIMER, Die Schmetterlinge von Europa, 5 (2): 431. Type species: *Phalaena (Geometra) elinguaris* LINNAEUS, 1758. Type locality: Not stated, [Europe].

The systematic position and the possible synapomorphies of the genus have not been clearly established, but *Crocallis* is considered to be closely related to *Gonodontis* HÜBNER, [1823].

DIAGNOSIS: Antennae pectinate in males and filiform in females. Labial palpi slightly elongate. Thorax robust and densely hairy. Forewings smaller than in *Gonodontis*, but costa less angulated; termen with slightly dentate margin. Forewing pattern reduced to two lines (first and second or antemedian and postmedian lines) delimiting a median fascia. Male genitalia very characteristic with very strong uncus. Valva bearing a distal brush of hairs. Furca well developed in most species. Aedeagus very characteristic and sclerotized; coecum penis variably long; distal cornuti variable in number and length. Female genitalia with ductus bursae flattened. Bursa copulatrix membranous, normally with rounded or pear-shaped signum, convex and internally spined.

In spite of certain clear-cut diagnostic characters, the identification of the species of the genus is sometimes difficult, largely due to local and individual variability. The imagines of some of the closely related species of *Crocallis* cannot always be distinguished using the wing pattern. The following key may facilitate the identification of the Iberian species.

- | | | |
|-------|---|-----------------------|
| 1 | Antemedian line angled at the level of Cu and A. Postmedian line angled at the level of M ₃ . Haustellum vestigial. Male genitalia Fig. 1, female genitalia Fig. 2 | <i>C. tusciaria</i> |
| — | Antemedian and postmedian lines slightly curved, but never angled | 2 |
| 2 (1) | Haustellum absent | 3 |
| — | Haustellum well developed | 4 |
| 3 (2) | Uncus short and thick. Furca absent. Aedeagus short, curved, three or four distal cornuti (Fig. 3). Female genitalia Fig. 4 | <i>C. albarracina</i> |
| — | Uncus long and slender. Furca present. Aedeagus long, slightly curved, one or two distal cornuti (Fig. 5). Female genitalia Fig. 6 | <i>C. elinguaría</i> |
| 4 (2) | Antemedian line slightly curved. Male genitalia Fig. 7. Bursa copulatrix long, single signum (Fig. 8) | <i>C. dardoinaria</i> |
| — | Antemedian line clearly curved. Male genitalia Fig. 9. Bursa copulatrix pear-shaped, no signum (Fig. 10) | <i>C. auberti</i> |

***Crocallis tusciaria* (BORKHAUSEN, 1793)** (Plate I, Figs 1, 2)

Phalaena tusciaria BORKHAUSEN, 1793, in SCRIBA, Beiträge zur der Insectengeschichte, 3: 217, pl. 17, figs 10-11. Type locality: South Europe.

MATERIAL EXAMINED: 174 ♂♂ and 51 ♀♀ collected in X-XII from 1914 to 1989 in 58 localities from Andorra and Spain, provinces of Alava, Burgos, Barcelona, Lleida, Girona, Jaén, Madrid and Teruel.

LITERATURE RECORDS: **Portugal**: Alto Douro (SILVA-CRUZ & GONÇALVES, 1974), Douro Litoral (SILVA-CRUZ, 1971), Estremadura (VEILLEDENT, 1905; SILVA-CRUZ & WATTISON, 1935; WEHRLI, 1940; ZERKOWITZ, 1946), Ribatejo (SILVA-CRUZ, 1967), Portugal (SILVA-CRUZ & GONÇALVES, 1977). **Spain**: Alava (AGENJO, 1934; GÓMEZ DE AIZPÚRUA, 1974, 1988), Barcelona (ROMAÑA, 1983; SARTO I MONTEYS, 1986; FLORES, 1974, 1981; VALLHONRAT, 1980, 1986), Burgos (MÉNDEZ GARNICA, 1983), Girona (VALLHONRAT, 1980, 1984, 1989a, 1989b), Granada (RIBBE, 1909-1912; WEHRLI, 1940), Guipúzcoa (GÓMEZ DE AIZPÚRUA, 1988), León (VEGA ESCANDÓN, 1980), Madrid (FLORES, 1945; VÁZQUEZ FIGUEROA, 1894; WEHRLI, 1940), Navarra (GÓMEZ DE

AIZPÚRUA, 1974 ; SÁNCHEZ EGUALDE & CIFUENTES, 1990), Teruel (ZERNY, 1927b ; WEHRLI, 1940 ; HACKER & WOLF, 1983), Zaragoza (REDONDO, 1986). Castilla (STAUDINGER & REBEL, 1901), Cataluña (SAGARRA, 1918), Aragón and Pyrenees (WEHRLI, 1940).

VARIABILITY : In the typical form, forewing ground colour ochreous-brown ; median fascia brown ; antemedian and postmedian lines blackish. Hindwing with vestigial postmedian line ; ground colour ochreous with thinly scattered blackish dots giving a greyish aspect. The f. *gaigeri* STGR is much darker, with forewing ground colour dark brown and median fascia less conspicuous. Hindwing uniformly dark grey ; antemedian line diffuse, sometimes absent. In the Iberian Peninsula, as in other meridional European areas f. *gaigeri* is the most common form. The typical form is known to occur in northern Europe and the Pyrenees, becoming progressively rare to the South.

BIOLOGY : Univoltine, flying in October and November, although sporadic finds in September and December have been reported. In central Europe imagines emerge in August, flying until November (WEHRLI, 1940 ; FORSTER & WOHLFAHRT, 1981). It flies by night and both sexes come to light. It overwinters as an egg (FORSTER & WOHLFAHRT, 1981). Larvae can be found in April and June and are polyphagous. Commonly, it has been recorded on *Prunus spinosa*, but it also feeds on *Rhamnus*, *Berberis*, *Hippophae*, *Clematis vitalba* (WEHRLI, 1940), *Crataegus*, *Fraxinus*, *Salix* (GÓMEZ DE AIZPÚRUA, 1987), etc. Larvae belonging to the form *gaigeri* have been recorded on *Cistus monspeliensis*, *C. salviifolius*, *Rosmarinus officinalis* and *Phillyrea media* (STAUDINGER, 1885 ; PROUT, 1915 ; FORSTER & WOHLFAHRT, 1981). Pupation usually occurs on the ground in a slight cocoon.

DISTRIBUTION : Mediterranean-Asiatic. It is distributed from Asia Minor to the Caucasus, the great part of central Europe (western and central Germany) and southern Europe (Balkans, Macedonia, Italy, including Sicily, southern France and the Iberian Peninsula) (STAUDINGER & REBEL, 1901 ; WEHRLI, 1940), including North Africa (RUNGS, 1981). With regard to the Iberian Peninsula, it is still very difficult to give an accurate distribution. It has been recorded mainly from the northern half of Spain, but this could be an artefact as it is the best worked part. In southern Spain it is known to be rare and, in fact, only one record has been reported until now, from Granada (RIBBE, 1909-1912). In Central Europe it has been recorded up to about 900 m in the Alps (FORSTER & WOHLFAHRT, 1981), but in the Iberian Peninsula it has been collected even at altitudes about 1500 m.

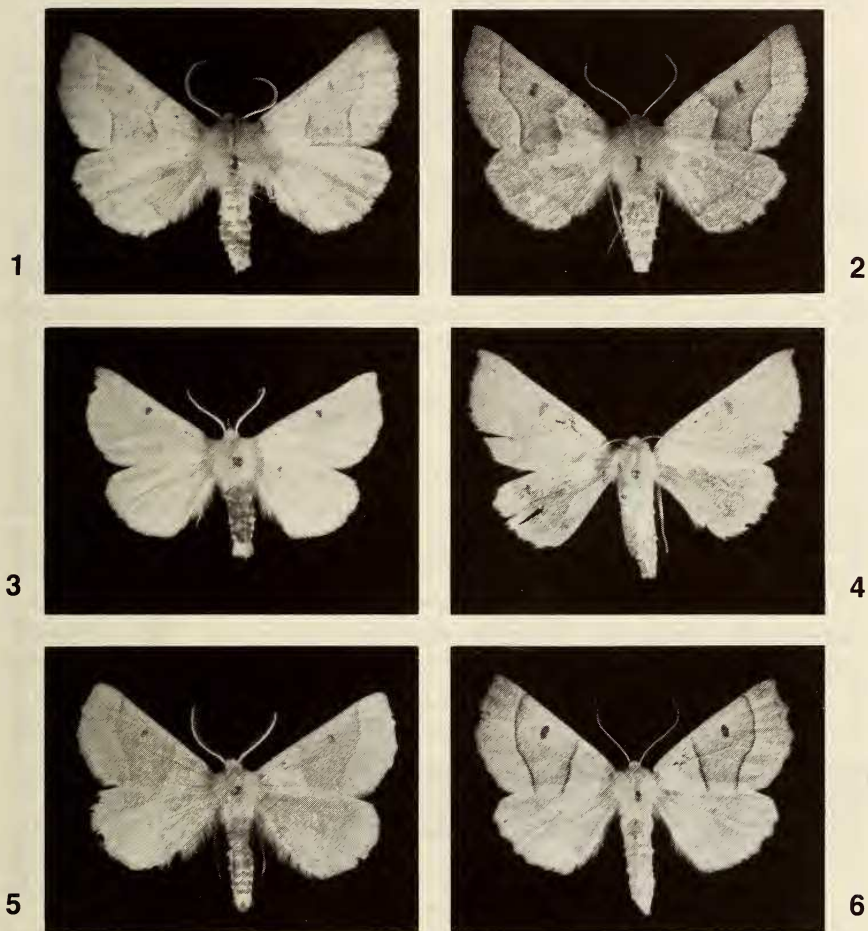
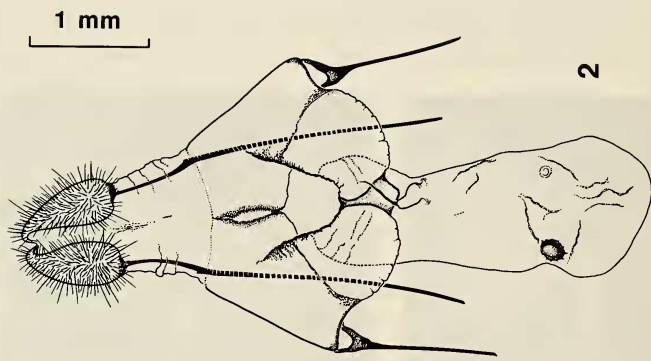
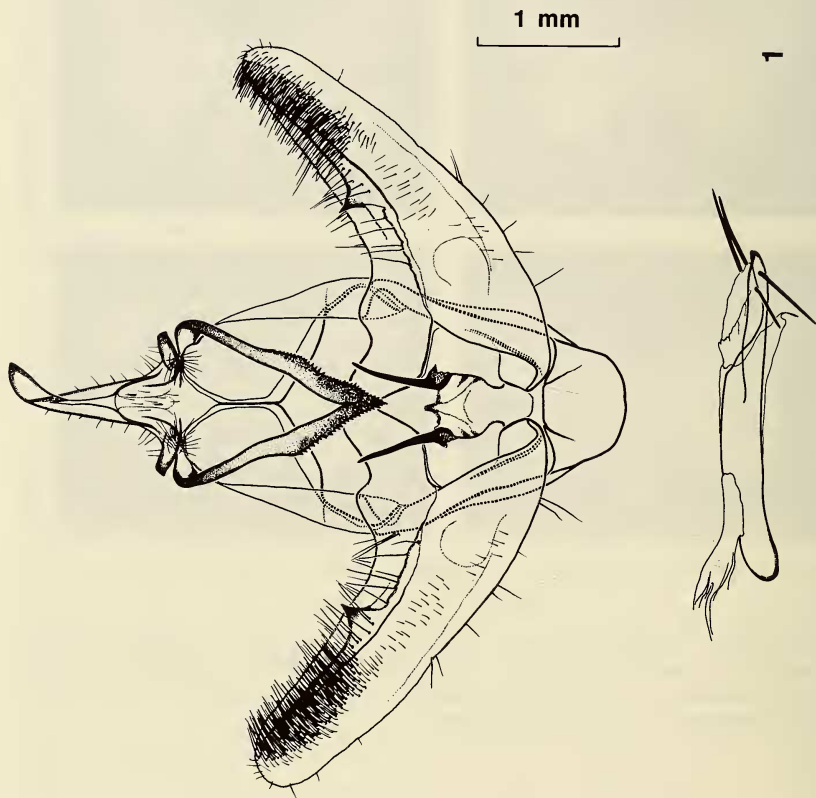


PLATE I

Adults of *Crocallis* Tr.

1 - *C. tusciaria*, ♂, Vespella (Girona), 25-X-86 ; 2 - *C. tusciaria*, ♀, Vespella (Girona), 21-X-89 ; 3 - *C. albarracina*, ♂, Sarrión (Teruel), 24-VII-88 ; 4 - *C. albarracina*, ♀, Solera de Gabaldón, 21-IX-89 ; 5 - *C. elinguarua*, ♂, Ribes Altes (Girona), 21-VIII-88 ; 6 - *C. elinguarua*, ♀, Forat Micó (Girona).



Figs 1, 2. *Crocallis tusciaria*. 1 - male genitalia ; 2 - female genitalia.

Crocallis albarracina WEHRLI, 1940 (Plate I, Figs 3, 4)

Crocallis elinguaris ssp. *albarracina* WEHRLI, 1940, in SEITZ, Die Gross-Schmetterlinge der Erde, Supplement 4 : 347, pl. 27b. Type locality : Albarracín Aragónien (Spain).

MATERIAL EXAMINED : **Spain, Cuenca** : Solera de Gabaldón 1047 m (30SWK80), 1 ♂, 5-IX-1989 ; 1 ♂, 14-IX-1989 ; 1 ♀, 21-IX-1989 (E. MONEDERO leg.). **Madrid** : Cercedilla (Estación Alpina and El Ventorrillo), 1400-1500 m (30TVL11), 80 ♂♂ and 1 ♀, VII-X-1929-1976 (J. ABAJO, R. AGENJO, J. HERNÁNDEZ, E. MORALES & D. PELÁEZ leg., MNCN). **Teruel** : Bronchales, 1573 m (30TXK18-28), 1 ♂, 17-VIII-85 (M. DOMÍNGUEZ leg.) ; Albarracín 1171 m (30TXK37), 3 ♂♂, 25-VIII-1986 (J. YLLA leg.) ; Sarrión 991 m (30TXK84), 2 ♂♂, 24-VIII-1988 (M. DOMÍNGUEZ leg.).

LITERATURE RECORDS : **Spain** : Albarracín (Teruel), 1171 m (30TXK37) as *C. elinguaris* f. *aequaria* FUSCH (ZERNY, 1927b) ; as *C. elinguaris* ssp. *albarracina* WHLI (WEHRLI, 1940) ; as *C. trapezaria* WARNECKE nec BSDV. (WARNECKE, 1940) ; as *C. albarracina* WHLI (WEHRLI, 1954 ; SCHWINGENSCHUSS, 1962).

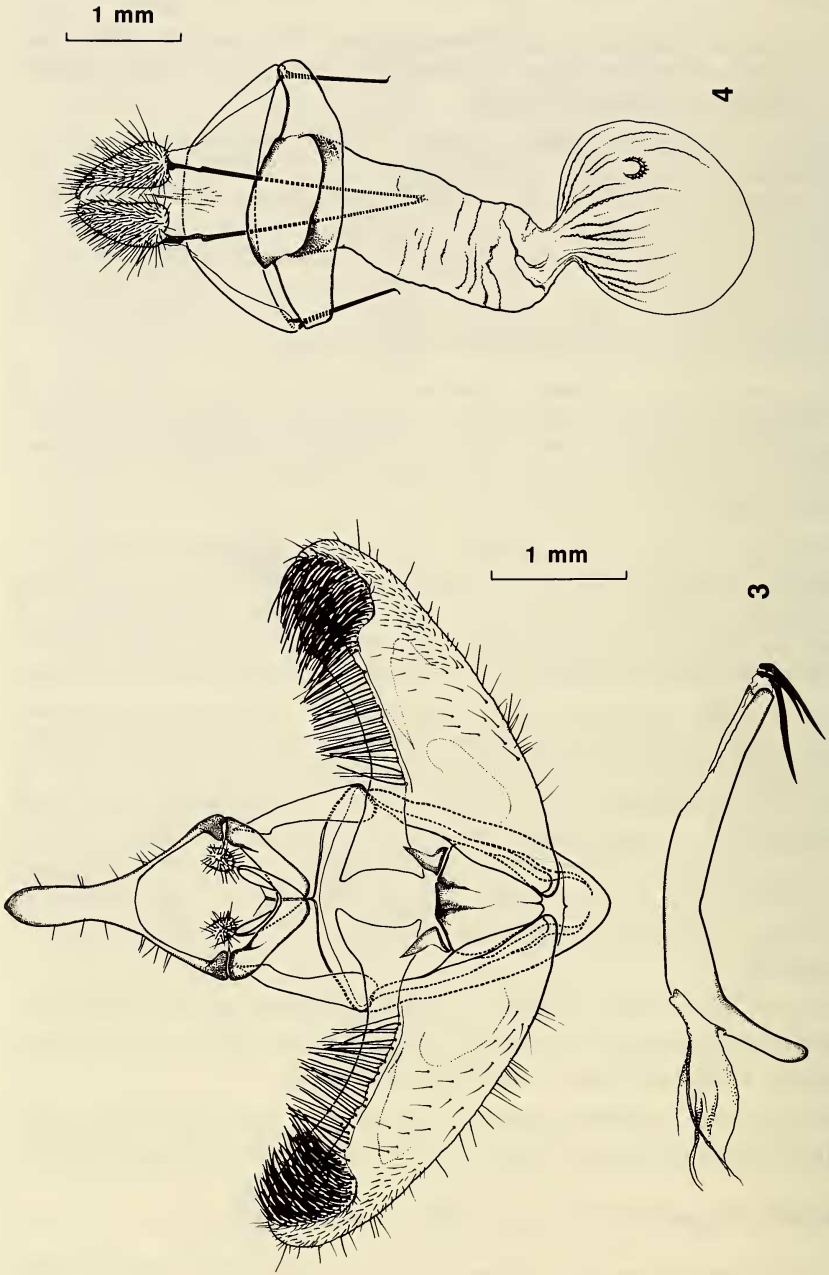
VARIABILITY : Not very variable. It is similar to some forms of *C. elinguaris* which has given rise to certain misidentifications. According to BOURSIN (1945 ; WEHRLI in litt.) and WEHRLI (1953) the first mention of the species is ascribed to ZERNY (1927b), who recorded it from Albarracín (Teruel) as *C. elinguaris* f. *aequaria* FUSCH. Later, WEHRLI (1940) described a new subspecies, *C. elinguaris albarracina*, based on the same material collected by PREDOTA in Albarracín. Finally WARNECKE (1940), having studied material collected by WAGNER in Albarracín considered it as belonging to f. *trapezaria* BSDV. and regarded it as a bona species. WEHRLI (1954), studied and confirmed the type material of the form *trapezaria* from Montpellier (France) (coll. BOISDUVAL ; coll. OBERTHÜR) as belonging to *C. elinguaris* (BOURSIN, 1945) and definitively separated *C. albarracina* from *C. elinguaris*.

BIOLOGY : Flies in late summer, usually from late July to September. Males come frequently to light, but females do not seem to be attracted so much. Immature stages and biology unknown.

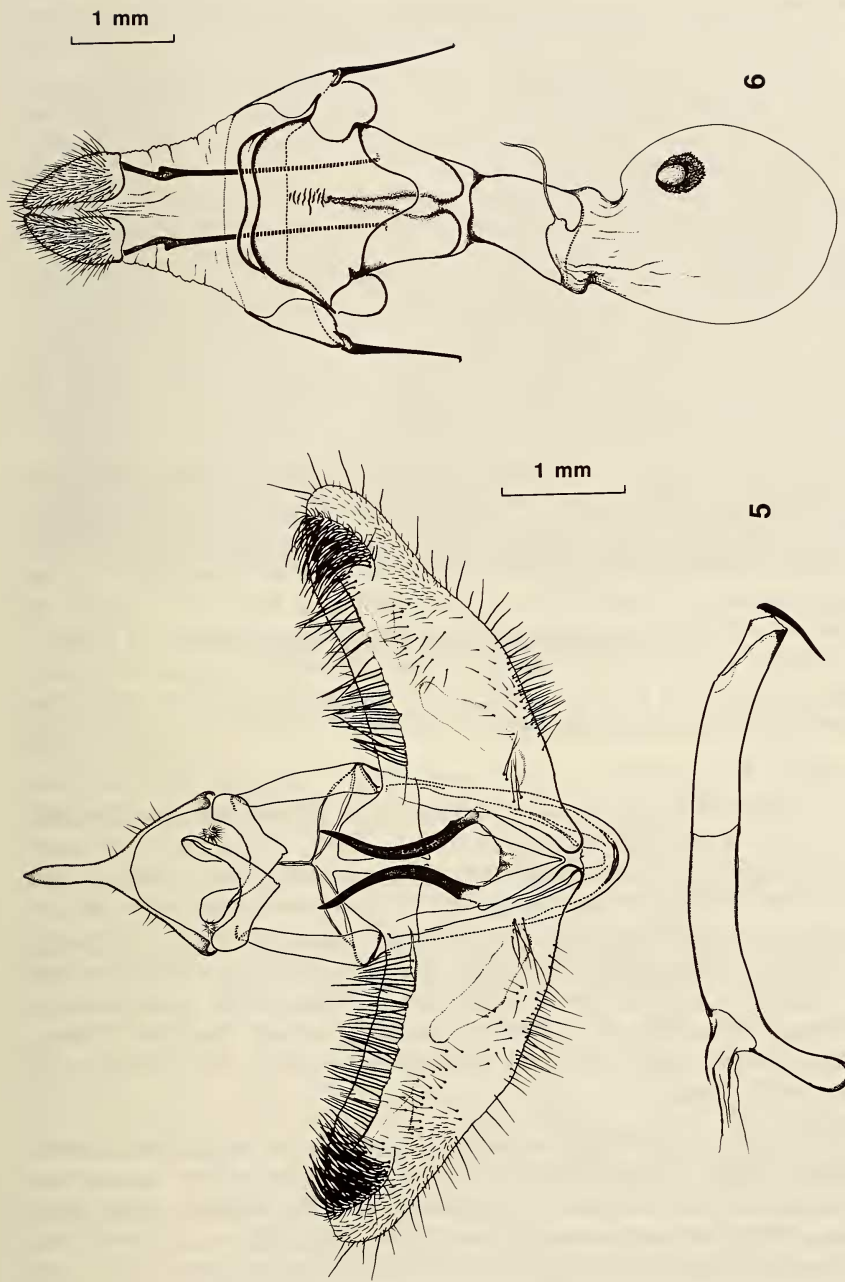
DISTRIBUTION : Endemic species, only known from the central part of the Iberian Peninsula, where it is probably fairly common (Map 1).

Crocallis elinguaris (LINNAEUS, 1758) (Plate I, Figs 5, 6)

Phalaena (Geometra) elinguaris LINNAEUS, 1758, Systema Naturae (Edn 10), 1 : 520. Type locality : Not stated, [Europe].



Figs 3, 4. *Crocallis albarracina*. 3 - male genitalia ; 4 - female genitalia.



Figs 5, 6. *Crocallis elinguarita*. 5 - male genitalia ; 6 - female genitalia.

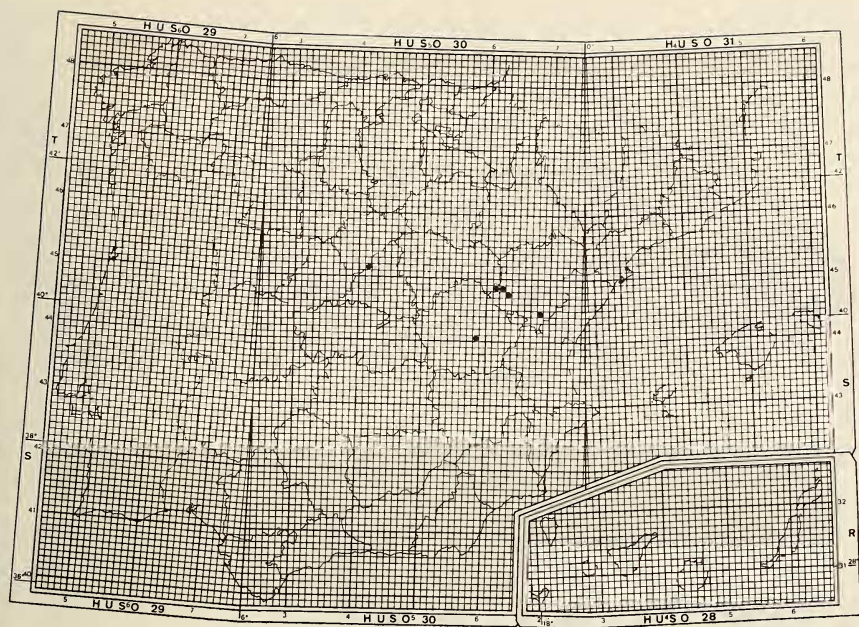
MATERIAL EXAMINED : 120 ♂♂ and 41 ♀♀ collected in VII-X from 1921 to 1989 in 48 localities from Andorra and Spain, provinces of Barcelona, Burgos, Girona, Guipúzcoa, Huesca, Lleida, Madrid, Santander, Segovia, and Teruel.

LITERATURE RECORDS : **Portugal** : Sierra de la Estrella (29TPE16) (SILVA-CRUZ & WATTISON, 1935 ; ZERKOWITZ, 1946). **Spain** : Alava (GÓMEZ DE AIZPÚRUA, 1974 ; 1988), Barcelona (WEISS, 1915 ; YLLA *et al.*, 1990 ; ALONSO DE MEDINA & OLIVELLA, 1986), Gerona (S.C.L., 1980 ; FLORES, 1981 and VALLHONRAT, 1984 ; 1989a ; 1989b), Granada (RIBBE, 1909-1912), Guipúzcoa (GÓMEZ DE AIZPÚRUA, 1974 ; 1988), Huesca (PARRACK, 1982 ; BOLLAND, 1976), Jaén (EXPÓSITO, 1979), Lérida (IBARRA, 1975), Navaita (GÓMEZ DE AIZPÚRUA, 1974 ; SÁNCHEZ EGUALDE & CIFUENTES, 1990), Oviedo (HURLÉ DE CASTRO, 1979), Santander (SÁNCHEZ EGUALDE & CIFUENTES, 1990), Teruel (WEISS, 1920 ; ZERNY, 1927b), Valencia (BOSCA SEYTRE, 1916 ; BOLLAND, 1978 ; PARDO GARCÍA, 1920), Vizcaya (STAUDINGER & REBEL, 1901 ; GÓMEZ DE AIZPÚRUA, 1988), Zaragoza (REDONDO, 1980). Castilla (PROUT, 1915 ; WEHRLI, 1940), Spanish Pyrenees (WARNECKE, 1940).

VARIABILITY : One of the most variable species in the genus and accordingly many forms have been described. Apart from the nominate form, f. *aequaria* FUSCH and f. *trapezaria* BSDV. (= *trapecina* CULOT nec BSDV.) have been recorded from the Iberian Peninsula. In the central region of Spain it is very common in a form very similar to *aequaria*, with forewing ground colour greyish brown and very bright ; the median fascia similar, without contrast with the general colour pattern. This form is very similar to *C. albarracina*, a fact which has caused several misidentifications.

BIOLOGY : Imagines fly in late summer, in a single generation from July to September. In warm areas the adults can emerge exceptionally early, at the beginning of June (WEHRLI, 1940), but at higher altitude the emergence may be delayed and it is possible to find moths as late as October. Both sexes come to light. It is uncertain whether this species hibernates as a larva or egg as the available data are rather contradictory, depending on the authors and areas studied (WEHRLI, 1940 ; GÓMEZ DE AIZPÚRUA, 1987). Larvae feed on different trees and shrubs : *Crataegus* spp. (WEHRLI, 1940), *Prunus spinosa*, *Lonicera*, *Rosa*, *Quercus* (SKOU, 1986), *Ulex*, *Cistus* (GÓMEZ DE AIZPÚRUA, 1987), etc. Pupa on the ground.

DISTRIBUTION : Eurasiatic, including Japan, Amur and Ussuri areas, South of Siberia, Kazakhstan, Caucasus and Asia Minor, as well as the major part of Europe, from Scandinavia to the Mediterranean area (SKOU, 1986) and one record from North Africa (RUNGS, 1981). On the Iberian Peninsula it appears to be very widespread and it is very common throughout the northern and central areas. It has been



Crocallis albarracina Wehrl, 1940

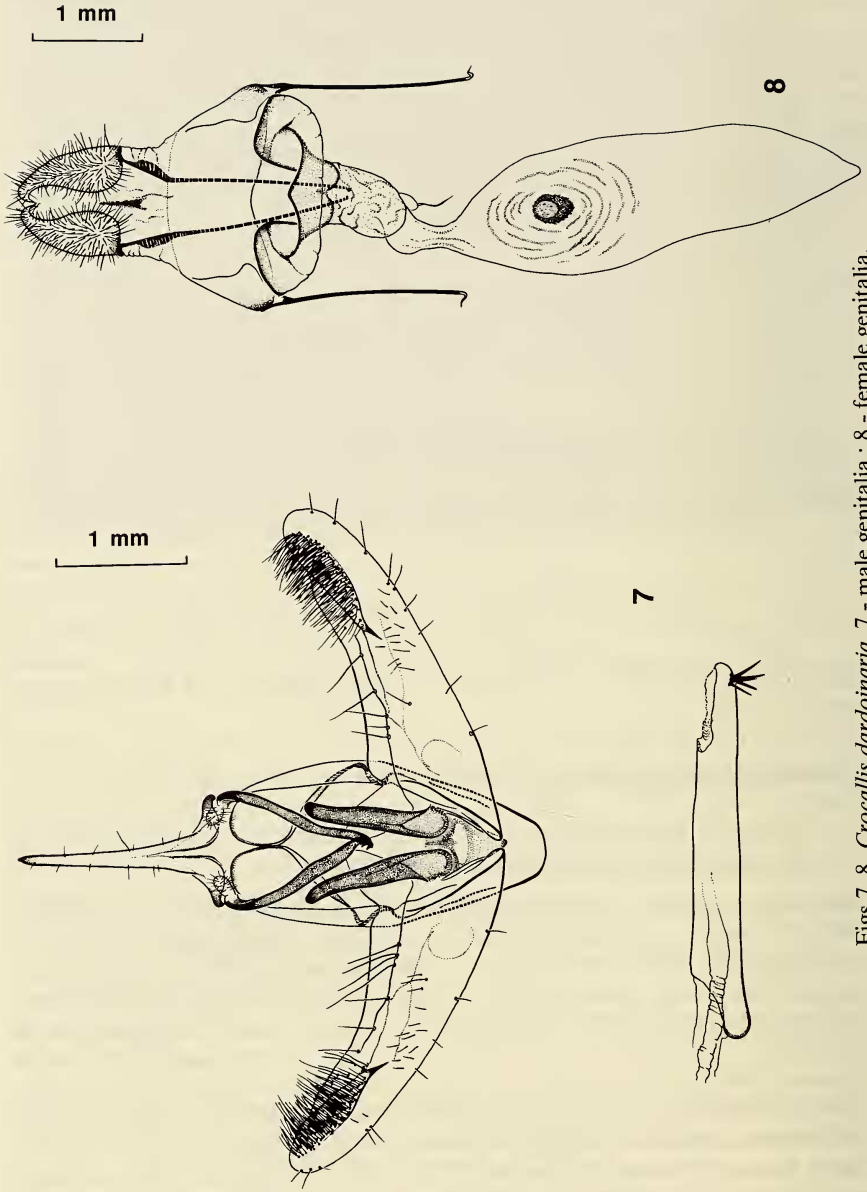
Map 1. Distribution of *Crocallis albarracina* in Spain.

collected up to 2000 m ; in central Europe (FORSTER & WOHLFAHRT, 1981) to 1600 m.

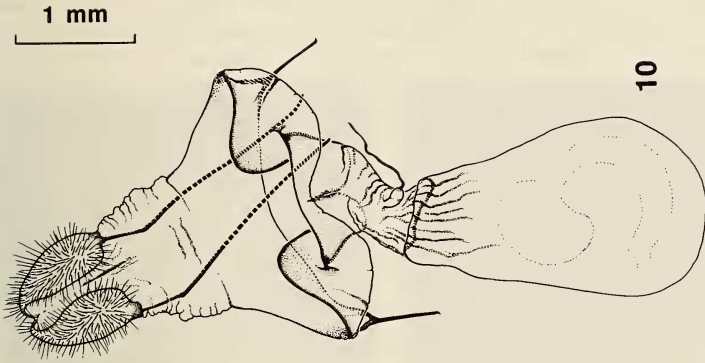
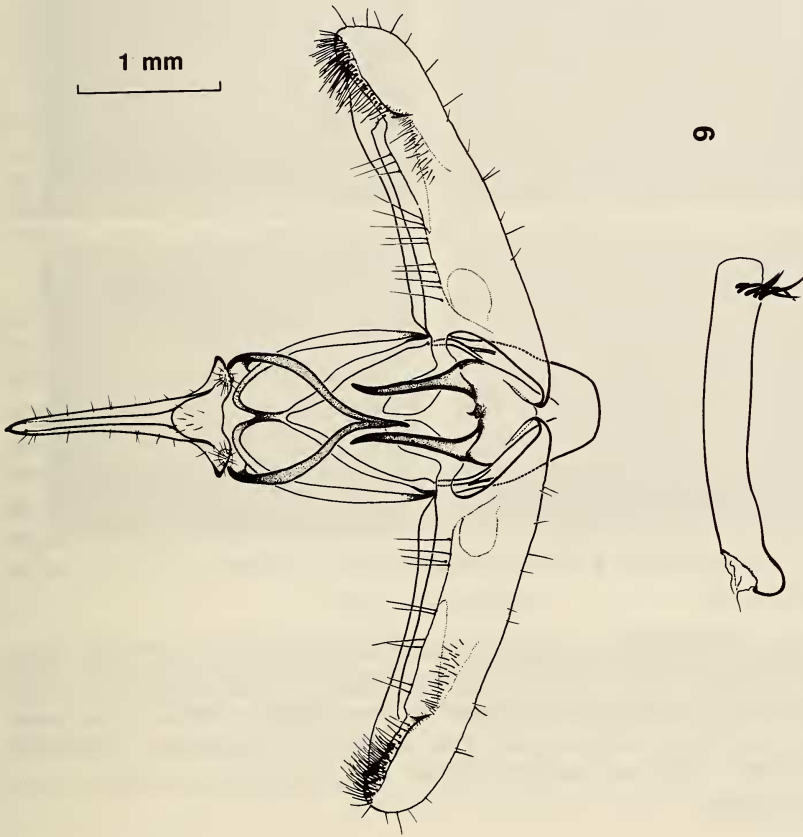
Crocallis dardoinaria DONZEL, 1840 (Plate II, Figs 1, 4)

Crocallis dardoinaria DONZEL, 1840, Anns. Soc. ent. Fr., (1) 9 : 59, pl. 4, figs a-b. Type locality : Marseille (France).

MATERIAL EXAMINED : **Spain, Alicante** : Benidorm (30SYH57), 1 ♂, 24-VI-1972 (E. BODI leg., ex. larva on *Ulex parviflorus*). **Barcelona** : Gualba, 110 m (31TDG61), 1 ♀, 25-IX-1951 (D. HOSPITAL leg., MNCN) ; Maians, 583 m (31TCG91), 1 ♀, 10-IX-1982 (E. REQUENA leg.) ; La Pobla de Claramunt, 265 m (31TCG80), 2 ♂♂, 10-IX-1985 (E. REQUENA leg.) ; Bellprat, 652 m (31TCF69), 1 ♀, 10-IX-1983 (E. REQUENA leg.) ; Punta Blava (T. M. de la Llacuna), 800 m (31TCF79), 1 ♀, 12-X-1984 (E. REQUENA leg.) ; Esparraguera, 187 m (31TDF09), 2 ♂♂ and 3 ♀♀, IX-X-1979-1980 (J. RIUS leg.) ; Les Fonts de Terrassa, 240 m (31TDF19), 1 ♂, 5-X-1948 (D. HOSPITAL leg., MNCN) ; Santa Maria de Vilalba, 185 m (31TDF19), 1 ♀, 1-X-1977 (A. CERVELLÓ leg.) ; Les Planes, 220 m (31TDF28), 4 ♂♂ and 1 ♀, IX-X-1924-1925 (J. FARRIOLS leg.) ; Vallvidrera, 360 m (31TDF28), 1 ♂, 14-IX-1921, (I DE SAGARRA leg., MZB), 1 ♀, X-1925 (J. FARRIOLS leg., MZB). **Burgos** : La Vid, 832 m



Figs 7, 8. *Crocallis dardoinaria*. 7 - male genitalia ; 8 - female genitalia.



Figs 9, 10. *Crocaltis auberti*. 9 - male genitalia ; 10 - female genitalia.

(30TVM50), 1 ♀, 4-IX-1931, 4 ♂♂ and 1 ♀, VIII-IX-1932 (MNCN). **Cuenca** : Solera de Gabaldón 1047 m (30SWK80), 3 ♂♂ and 3 ♀♀, 5-28-IX-1989 (E. MONEDERO leg.). **Girona** : Sant Privat de Bas, 542 m (31TDG56), 1 ♂, 6-X-1984 (J. BELLAVISTA leg.); Mieres, 286 m (31TDG76), 1 ♂, 11-X-1987 (A. CERVELLÓ leg.); Susqueda, 281 m (31TDG64), 1 ♀, 22-IX-1984 (L. BOSCH leg.), 1 ♀, 27-IX-1987 (DE-GREGORIO leg.); Montnegre, 289 m (31TDG94), 1 ♀, 28-IX-1989 (DE-GREGORIO, leg.); Palamós, 12 m (31TEG13), 1 ♂, 26-X-1989 (P. PASSOLA leg.); Vidreres (Urb. Puig Ventós), 93 m (31TDG82), 5 ♂♂ and 2 ♀♀, IX-X-1981-1989 (E. BODI leg.). **Pontevedra** : Marín, 20 m (29TNG29), 1 ♂, VIII-1934 (D. PELÁEZ leg., MNCN). **Valencia** : Porta-Coeli, 400 m (30SYJ19), 2 ♂♂, 11-IX-1982; 1 ♂, 26-VIII-1983; 1 ♂, 17-VIII-1987; 1 ♂, 19-IX-1987; 1 ♂, 15-X-1987; 1 ♂, 17-VII-1988; 3 ♂♂, 1 ♀, 8-X-1988 and 2 ♀♀, 29-IX-1989 (M. DOMÍNGUEZ leg.).

LITERATURE RECORDS : **Portugal** : Douro Litoral (SILVA-CRUZ, 1971). **Spain** : Alicante (TORRES SALA, 1962), Barcelona (FLORES, 1974, 1981; BOLLAND, 1976; CUNI I MARTORELL, 1874; 1889; VALLHONRAT, 1986), Burgos (FERNÁNDEZ, 1933), Cádiz (SCHWINGENSCHUSS, 1929; ZERNY, 1927a), Castelló (CALLE, 1983), Cuenca (HACKER & WOLF, 1983), Girona (S.C.L., 1980; VALLHONRAT, 1989a), Granada (RIBBE, 1909-1912), Huesca (BOLLAND, 1976; HACKER & WOLF, 1983), Murcia (HACKER & WOLF, 1983), Navarra (CIFUENTES, 1989; recorded as *C. auberti*); Tarragona (AGENJO, 1958), Teruel (HACKER & WOLF, 1983; ZERNY, 1927b; KOSCHWITZ *et al.*, 1985), Valencia (BOLLAND, 1978; DOMÍNGUEZ & BAIXERAS, 1989), Zaragoza (REDONDO, 1986). Cataluña (STAUDINGER & REBEL, 1901; PROUT, 1915), Cataluña, Aragón and Andalucía (WEHRLI, 1940), Cataluña media (MARTORELLI PEÑA, 1879).

VARIABILITY : Individual variability in both colour and wing pattern is known. HERBULOT (1957) described a subspecies, *C. dardoinaria atlantica*, that shows a deeper yellow ground colour. The subspecies is known to occur in the French departments of the Atlantic littoral. REDONDO (1986) considered the material collected in the depression of Ebro (in Aragón) as belonging to this subspecies and the material studied from La Vid (Burgos) could be also ascribed to it. In spite of these data and taking into account the available material it seems very difficult to give a suitable answer to the problem of subspeciation in this species.

BIOLOGY : Univoltine, imagines fly normally from July to October. Both sexes come to light. Larvae feed in winter on different species of the genus *Ulex* (*U. nana*, *U. europaeus*, *U. parviflorus*). *Genista*, *Juniperus*, *Cistus* and *Phillyrea* have been also recorded as foodplants (LHOMME, 1923-1935). They are usually full-fed in mid-spring and pupate in a slight cocoon.

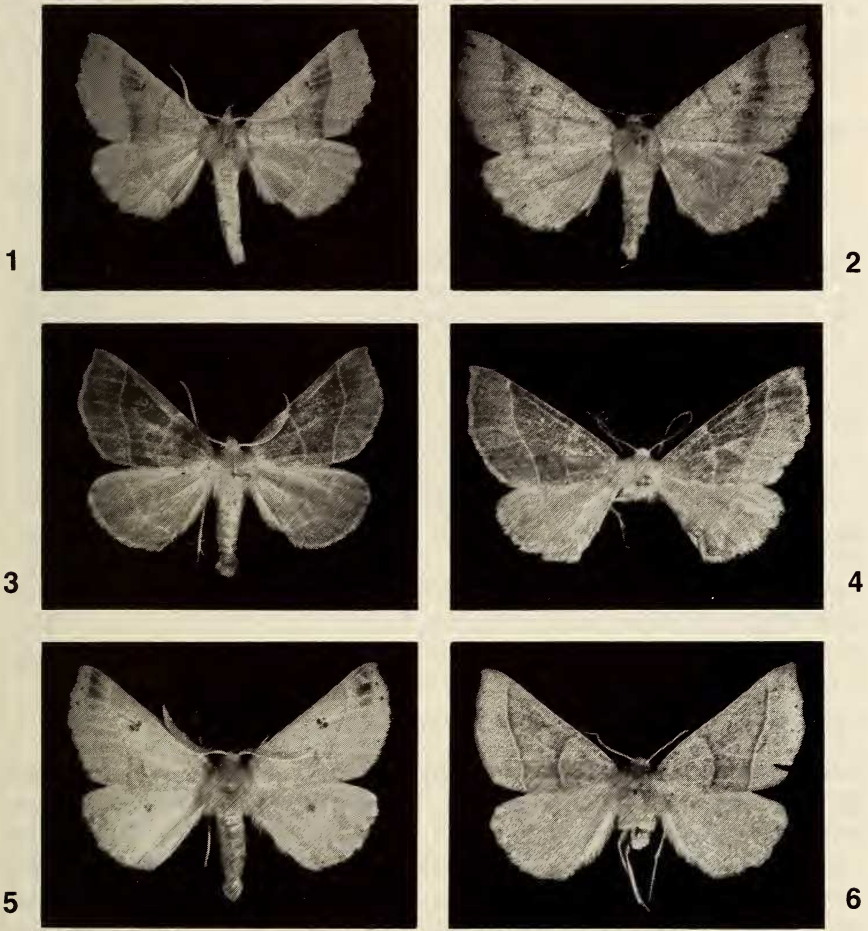


PLATE II

Adults of *Crocallis* Tr.

1 - *C. dardoinaria*, ♂, Porta-Coeli (Valencia), 20-IX-90 ; 2 - *C. dardoinaria*, ♀, Solera de Gabaldón (Cuenca), 28-IX-89 ; 3 - *C. dardoinaria*, ♂, Porta-Coeli (Valencia), 20-IX-90 ; 4 - *C. dardoinaria*, ♀, Porta-Coeli (Valencia), 26-IX-87 ; 5 - *C. auberti*, ♂, Pobra de Benifassá (Castelló), 15-IX-90 ; 6 - *C. auberti*, ♀, La Pobra de Claramunt (Barcelona), 10-IX-85.

DISTRIBUTION : Atlanto-Mediterranean. It was described from southern France, and has otherwise been reported from North Africa (RUNGS, 1981), Iberian Peninsula and western France (HERBULOT, 1957). WEHRLI (1940) recorded it from Sardinia. It must be widespread throughout the Iberian Peninsula but the available data are very scarce. It has been collected up to 1100 m.

***Crocallis auberti* OBERTHÜR, 1883** (Plate II, Figs 5, 6)

Crocallis auberti OBERTHÜR, 1883, Bull. Soc. ent. Fr. : xlviii. Type locality : Sebdou (Algeria).

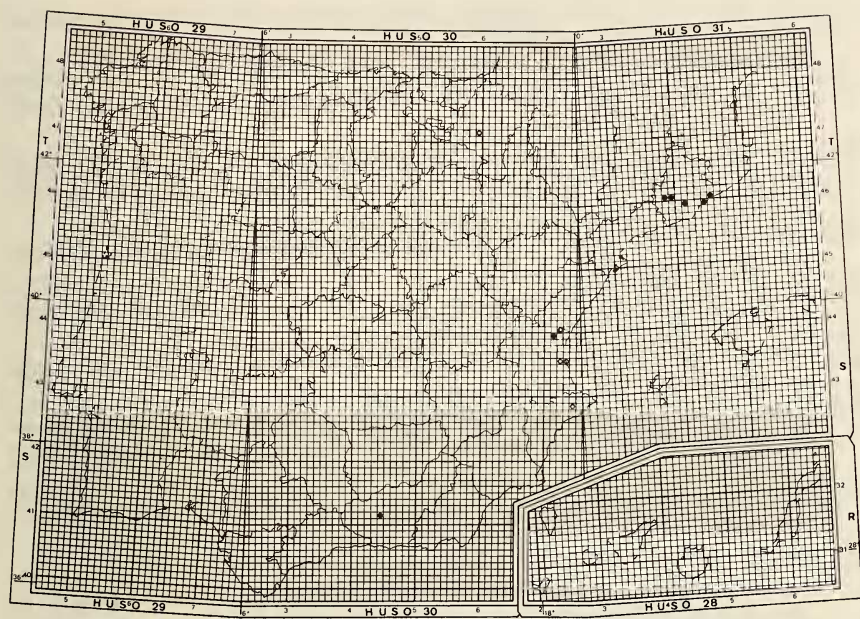
MATERIAL EXAMINED : **Spain, Barcelona** : La Pobla de Claramunt, 265 m (31TCG80), 1 ♀, 10-IX-1985 (E. REQUENA leg.) ; Castellolí, 420 m (31TCG90), 1 ♂, 12-X-1987 (J. DANTART leg.) ; Santa Maria de Vilalba, 185 m (31TDF19), 1 ♂, 23-IX-1988 (A. CERVELLÓ leg.) ; El Corredor, 638 m (31TDG50), 1 ♂, 27-VIII-89 (A. MASÓ leg.) ; Ermita de Sant Mateu, 490 m (31TDG49), 1 ♂, 26-IX-1989 (A. MASÓ leg.). **Granada** : Granada, 833 m (30SVG41), 1 ♀, XI-1955 (L. GÓMEZ leg., R. AGENJO det., MNCN). **Valencia** : Porta-Coeli, 281 m (30SYJ19), 1 ♂, 19-IX-1987 ; 1 ♂, 8-X-1988 (M. DOMÍNGUEZ leg.).

LITERATURE RECORDS : **Spain, Alicante** : Guadalest, 587 m (30TYH48), (BOLLAND, 1981). **Barcelona** : Coll dels Brucs, 620 m (31TCG90) (BOLLAND, 1981, 1985). **Granada** : Granada, 833 m (30SVG41) (AGENJO, 1974). **Navarra** : Larraga, 452 m (30TWN91) (CIFUENTES, 1989). **Valencia** : Torres-Torres, 168 m (30SYK20), El Saler and La Albufera, 5 m (30SYJ25-35) (BOLLAND, 1981) ; Porta-Coeli, 281 m (30SYJ19) (DOMÍNGUEZ & BAIXERAS, 1990) ; Devesa de la Albufera, 5 m (30SYJ25-35) (NAVARRO *et al.*, 1988).

VARIABILITY : No variability has been reported or detected.

BIOLOGY : Univoltine ; imagines fly in autumn, in September and October. Both sexes come to light, but not very freely. According to BOLLAND (1981) females seem to come to light more frequently. According to OBERTHÜR (1922), who described the larva of the species very carefully, it can be found in winter, feeding on *Coronilla valentina*. It is full-fed at the end of January and beginning of February ; pupation occurs underground. BOLLAND (1981) recorded it on *Prunus spinosa*.

DISTRIBUTION : Atlanto-Mediterranean. Its distribution extends to North Africa and the eastern littoral area of the Iberian Peninsula. AGENJO (1974) recorded the species for the first time from the Peninsula, from Granada. Since then, the most important contribution is due to BOLLAND (1981), who extended remarkably the knowledge of its distribution area in the Iberian Peninsula (Map 2). *C. auberti* seems to occur chiefly in the Mediterranean zones where it is locally distributed.



Crocallis auberti Oberthür, 1883

Map 2. Distribution of *Crocallis auberti* in Spain.

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